

WHAT IS CLAIMED:

1. An isolated polynucleotide comprising a nucleotide sequence of any one of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6 or SEQ ID NO: 40.
- 5 2. An isolated polynucleotide comprising a nucleotide sequence encoding an amino acid sequence of any one SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, or SEQ ID NO: 41.
- 10 4. An isolated polypeptide comprising an amino acid sequence encoded by a nucleotide sequence of claim 1 or a fragment thereof.
5. An isolated polypeptide comprising an amino acid sequence of any one SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11,  
15 SEQ ID NO: 12 or SEQ ID NO: 41.
6. A composition comprising a polypeptide of claim 4 or 5 and a pharmaceutically acceptable carrier.
- 20 7. An antibody that specifically binds to a polypeptide of claim 4 or 5 or fragment thereof.
8. A composition comprising an antibody of claim 8 and a pharmaceutically acceptable carrier.
- 25 9. A method for detecting NTHi bacteria in a biological sample comprising
  - (a) contacting a polynucleotide of claim 1 or a fragment thereof with a biological sample, and
  - 30 (b) detecting hybridization of the polynucleotide within the sample.
10. A method for detecting NTHi bacteria in a biological sample comprising
  - (a) contacting a polynucleotide of claim 2 or a fragment thereof with a  
35 biological sample, and

(b) detecting hybridization of the polynucleotide within the sample.

11. A method for detecting NTHi bacteria in a biological sample comprising:

- 5 (a) contacting an antibody of claim 7 with a biological sample, and  
(b) detecting binding of the antibody within the sample.

12. The method of any one of claims 9-11 wherein the biological sample is selected from the group consisting of serum, sputum, ear fluid, blood, urine,  
10 lymphatic fluid, and cerebrospinal fluid.

13. A method for eliciting an immune response to NTHi bacteria comprising administering an immunogenic dose of a polypeptide of claim 4 or 5 or a fragment thereof to a patient at risk of NTHi bacterial infection.

14. A method of treating or preventing NTHi bacterial infection comprising administering a molecule that inhibits expression or activity of a polypeptide of claim 4 or 5 to an patient in need.

15. The method of claim 14 wherein the molecule administered to the patient in need is an antisense oligonucleotide.

16. The method of claim 14 wherein the molecule administered to the patient in need is an antibody.

17. The method of claim 14 wherein the molecule administered to the patient in need is a small molecule.

18. The method of claims 14 wherein the NTHi infection is in the middle  
30 ear.

19. A method of modulating virulence of a NTHi bacterium comprising mutating genes within the *sap* operon wherein the mutation increases sensitivity to antimicrobial agents.

35